

# *Public Health Performance Management Centers for Excellence*

**Welcome!**  
***Performance Measures in Quality  
Improvement***  
will begin shortly

# *Public Health Performance Management Centers for Excellence*

## *Performance Measures in Quality Improvement*

September 9, 2013

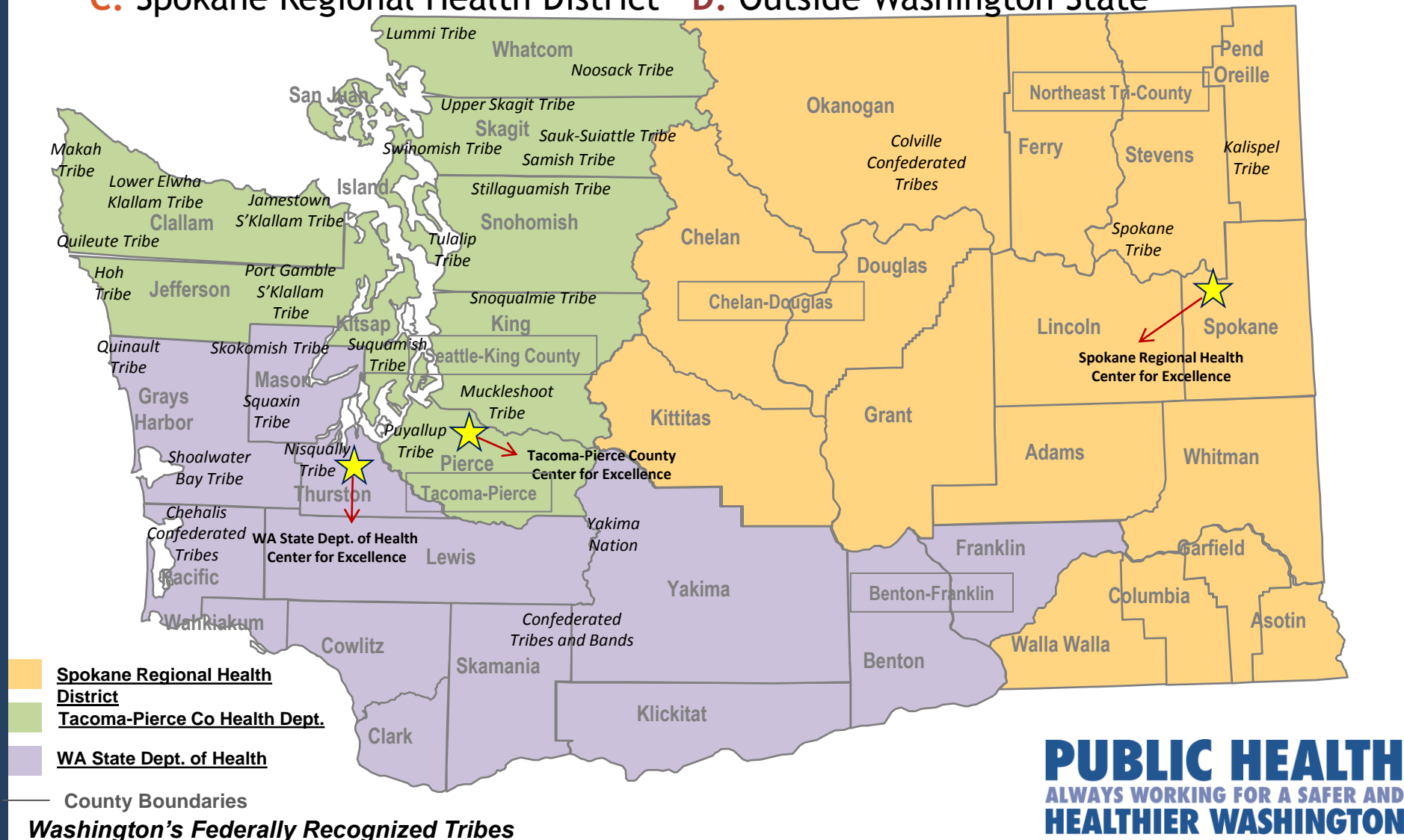
September 2013

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*Funded by the U. S. Centers for Disease Control's National Public Health Improvement Initiative*

# Which Center for Excellence Region are you located in?

- A.** Department of Health   **B.** Tacoma-Pierce County Health Department  
**C.** Spokane Regional Health District   **D.** Outside Washington State



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# Today's Learning Objectives:

Upon completion participants should be able to:

- Establish meaningful performance measures for work processes
- Describe at least 2 types of measures for a QI project and reasons for selecting different types of measures
- Understand and practice the use of Pareto Charts and apply to QI projects

# Performance Management

Performance management includes the following:

1. Performance Measures
2. Quality Improvement
3. Reporting of Progress
4. Performance Standards

# Definition of Performance Measurement

“Performance measurement consists of quantitative or qualitative measures of capacities, processes, or outcomes relevant to the assessment of a performance indicator.”

Performance Measurement for Public Health Policy Toolkit, APHA and PHF - August 2012

# Principles for Performance Measurement

1. Know why you are measuring
2. Be selective
3. Let your customers tell you what results to measure
4. Continually ask how you and your stakeholders are doing
5. Track the internal processes that produce your results
6. Tell and show people what you learn

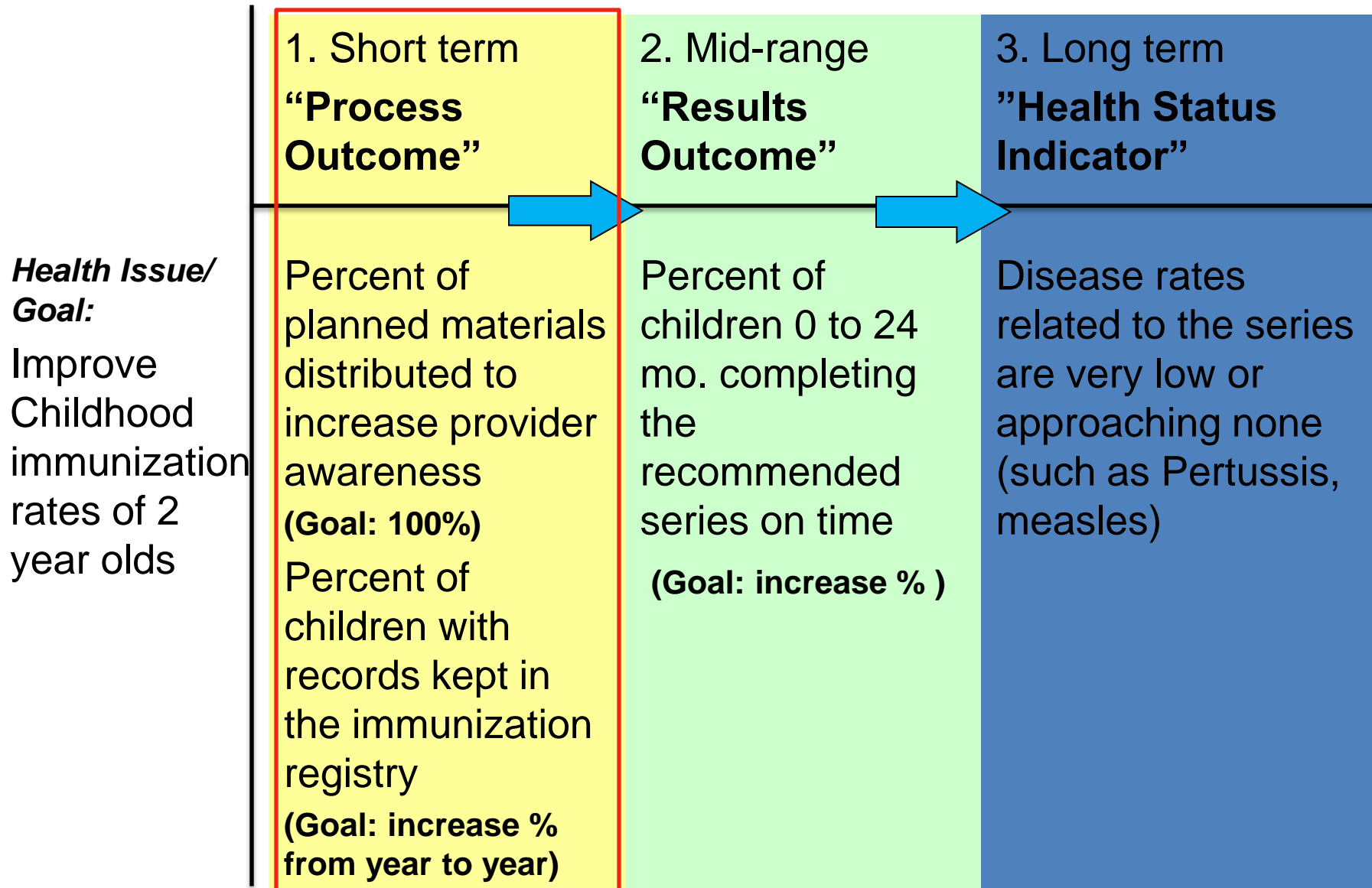
# Dimensions of quality

Dimension	Meaning
<b>1. Performance</b>	What are the Primary Operating Characteristics i.e. the way it is supposed to work
<b>2. Features</b>	Additional quality aspects(do these enhance)
<b>3. Time</b>	e.g. Waiting time, Cycle time, completion time
<b>4. Perceived quality</b>	Personal preferences and needs
<b>5. Reliability</b>	Extent of “failure-free” services
<b>6. Personal Interface</b>	Punctuality, courtesy, professionalism

Adapted from *The Improvement Guide*, Langley, Nolan, Norman & Provost, 1996



# Success can be Measured in Stages



# Selection of Performance Measures

Ask the following questions:

- Is it meaningful?
- Is it focused on customer requirements or needs?
- Is it accurate and are reliable data available?
- Is it simple enough to be understood?
- Is it cost effective to collect and report the data?
- Can the data be compared over time?
- Is the measure useful?

# Focus on work process

- What is a process?

Series of related tasks directed at accomplishing one particular outcome

- What is a system?

Group of related processes



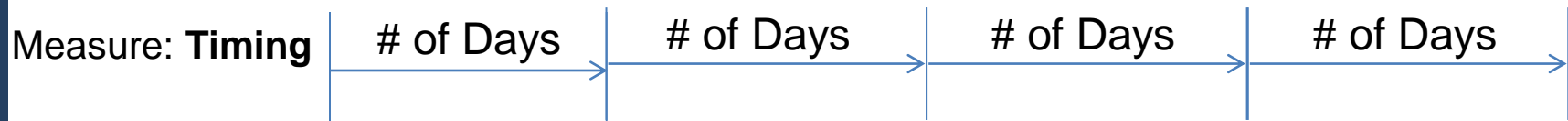
# Types of Work Process Measurement

Type of Measure	Definition	Examples
Process Input	amount of resources such as labor, equipment, supplies	Number of employees, number of clients eligible for program, number of permit applications, number of reports received, amount of grant funds received
Process Output	number of services provided	Number of permit applications reviewed, number of classes presented and participants trained, number of clients served
Process Outcome	short term results of services (immediate results, effectiveness)	Rate of inspections or reviews completed on time, percent of class attendees with improved post test scores, lower critical violation rates in restaurants,
Process Efficiency	reflect cost per output or outcome	Number of clients served compared to number eligible, turnaround time per application processed

# Example of Automobile:

Customer Need	Translation	Outcome or Effectiveness Measure
Protection from problems	Length of warranty	Years, months
	Coverage of warranty	List of subsystems covered or excluded, costs covered or excluded
Efficiency	Distance traveled per quantity of fuel	Miles per gallon, Km per liter of fuel
Reliability	Repairs or breakdowns	Failure rate, time between failures, recalls
Service	Promptness	Days, hours
	Competence	Percent of recalls for service
	Courtesy	Number of complaints about attitude or courtesy

# Contract Implementation work process flow (high level)

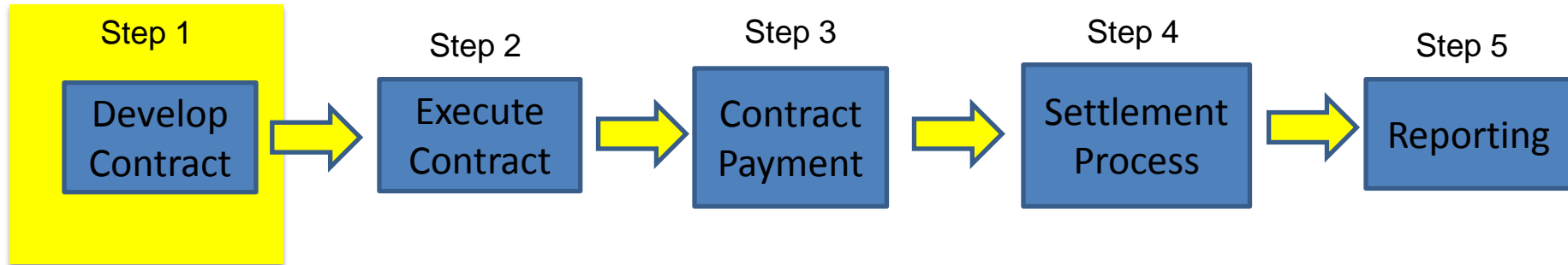


What is valued by the customer (as it relates to the contract implementation process:

- Simple contract
- Hassle-free payments
- Rapid processing
- Accurate contract payment

**NOTE:** Need to understand the needs of key stakeholders and how each part of the process supports meeting these needs.

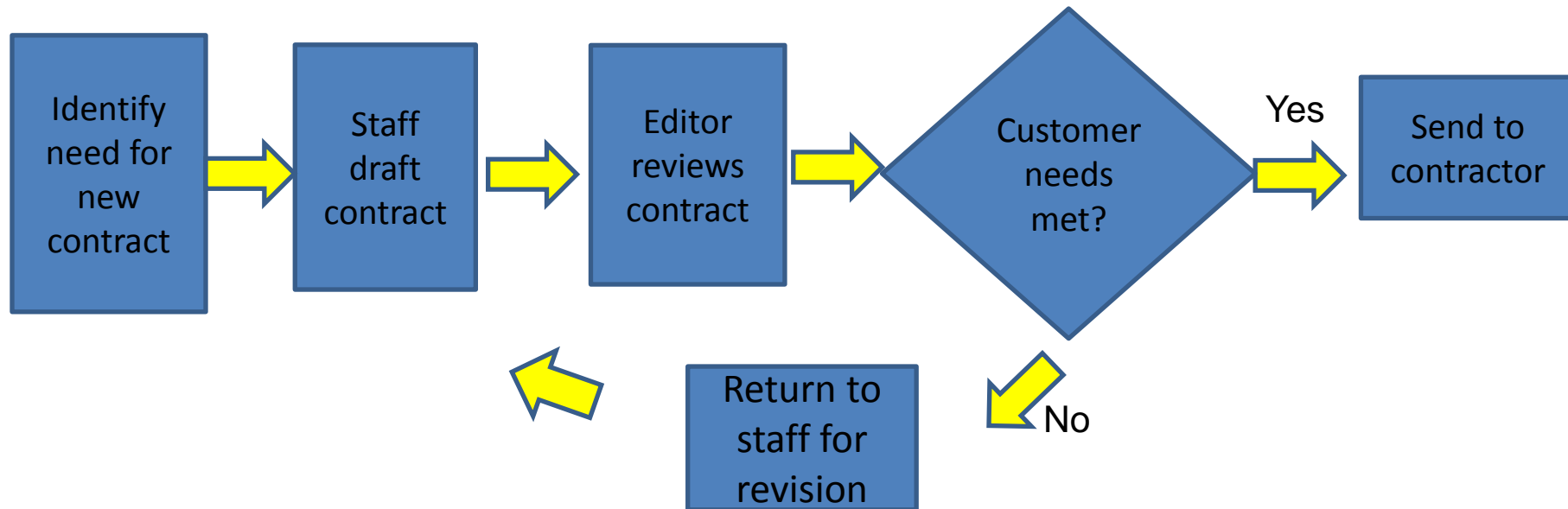
# Link Customer (External) Need to Process



Customer requirements / needs:

1. Simple contract
2. Hassle-free payments
3. Rapid processing
4. Accurate contract payment

## Breakdown of Step 1: Develop contract & 1<sup>st</sup> customer need: Simple contract



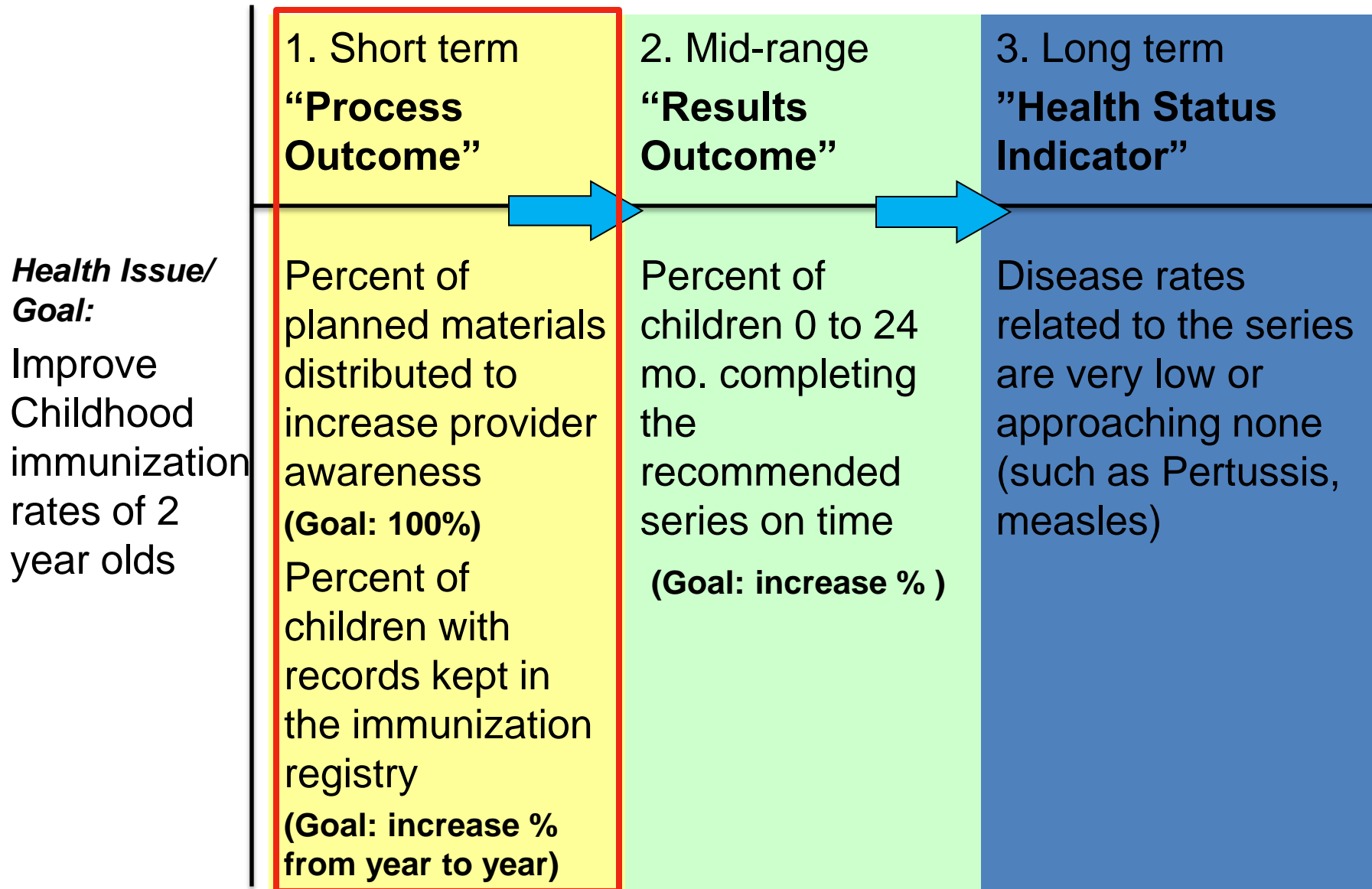
### WHAT ARE THE MEASURES THAT WE CAN IDENTIFY FOR THE SIMPLE CONTRACT C/S REQUIREMENT

Survey of contractors - showed “simple” means:

1. Clear statements of deliverables - percent of contract deliverables agreed to by contractor
2. Specific deadlines - percent deadlines stated with date and time due
3. Lay language - use of acronyms? Is there a glossary/ Are terms defined?

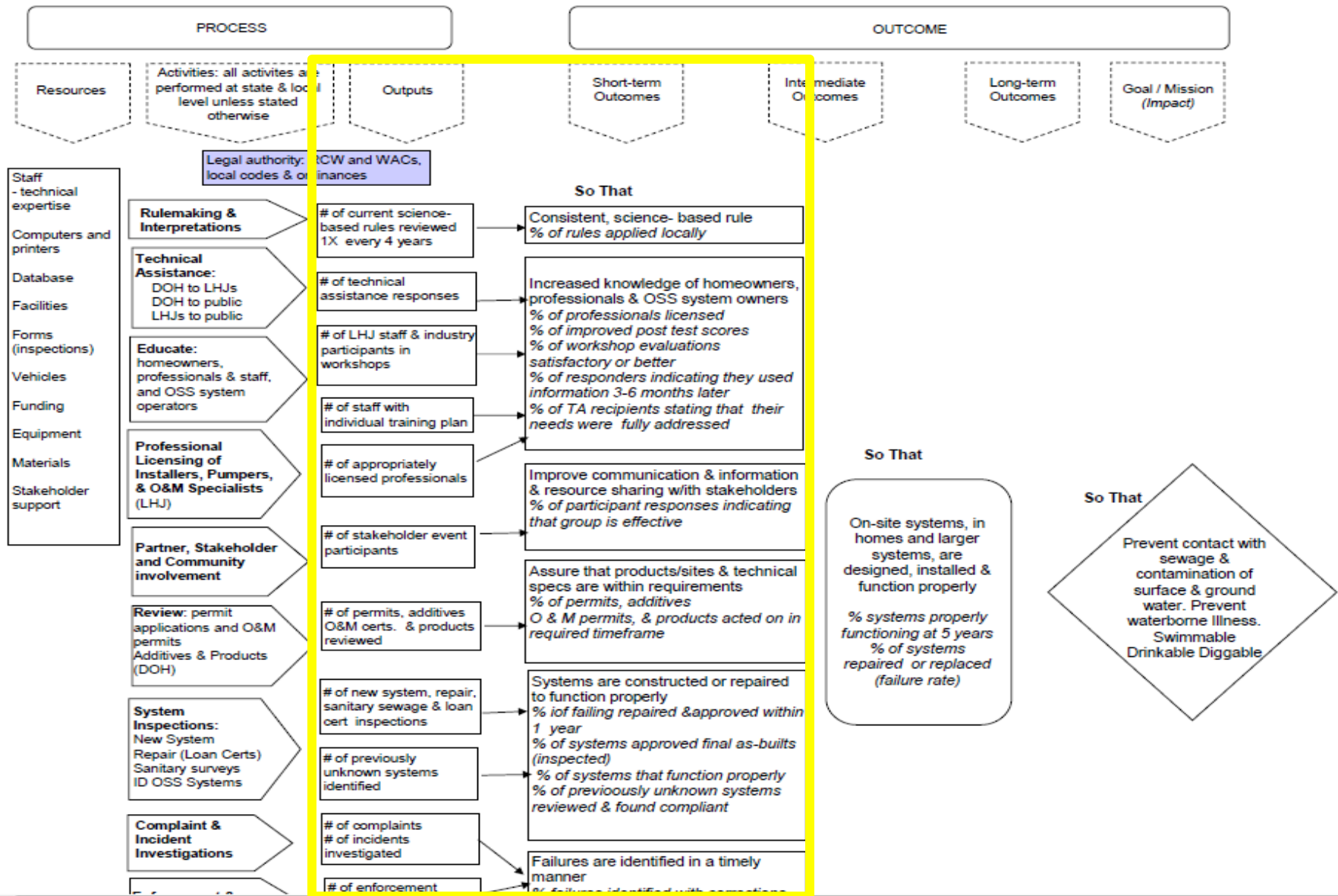


# Success can be Measured in Stages



# On-Site Sewage Program Logic Model

**Mission/Goal:** The public's health is protected by preventing disease associated with sewage and by assuring safe, uncontaminated ground and surface water.



# Data Description and Collection Form

Performance measure:	
Target population:	
Numerator:	
Denominator:	
Source of data:	
Which are you using – a target or a benchmark?	
What is target/benchmark?	
Who will collect the data?	
How often will the data be analyzed and reported?	
Baseline measurement data and date(s):	

# Data Description and Collection Form

Performance measure:	Food handler class effectiveness
Target population:	People being trained for food handling
Numerator:	Number of attendees that scored 80% or higher
Denominator:	Number of attendees at food handling class
Source of data:	Class records
Which are you using – a target or a benchmark?	Target
What is target/benchmark?	95% (based on past performance)
Who will collect the data?	Jim Smith
How often will the data be analyzed and reported?	Quarterly
Baseline measurement data and date(s):	81% (2011)

# Data Description and Collection Form

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20

# **Establishing Targets or Goals for Performance Measures**

- Use a reliable method to identify and establish targets or thresholds for the work process measures (yellow area i.e. the short term process outcomes):
  - Customer Requirements/Needs
  - Regulatory Targets or Requirements
  - State average performance or rates
  - “Sister” Organizations’ Data e.g. Seattle King County vs Tacoma Pierce County
  - Your Own Past Performance (historical data)

# **Examples of Reporting on Performance Measures**

## Performance Measures “Snapshot”

### Department Level:

Program	Brief Statement of Measure	2010 Goal	2010 Achieved	2011 Goal	1 <sup>st</sup> Q	2 <sup>nd</sup> Q	3 <sup>rd</sup> Q	4 <sup>th</sup> Q	2011 Total
% Met target	(met target/measures with data)								

### Division Level:

Program	Brief Statement of Measure	2010 Goal	2010 Achieved	2011 Goal	1 <sup>st</sup> Q	2 <sup>nd</sup> Q	3 <sup>rd</sup> Q	4 <sup>th</sup> Q	2011 Total







## Performance Measures “Snapshot”

### 2013 Office of the Director/Administrative Services

#### Program Level Performance Measures

Business Unit/ Program		Performance Measure	2012 Achieved	Target	1Q	2Q	3Q	4Q	YTD
OAPI	1	Percent of OAPI data requests that are fulfilled within five business days	88%	90.00%	100.00%	74%			
		N = data requests received			26/26	14/19			
	2	Percent of TPCHD health indicators that have been updated with the latest available data	100% (14/14)	100.00%	100.00%	100%			
		N = number of indicators			57/57	1			
	3	Percent of customers who were satisfied with OAPI's work product at the end of the project	not collected	100.00%	no data	89% (8/9)			
		N = number of customers/projects			1	9			
VR	1	Net revenue from Vital Records fees	\$501,395	\$501,395	\$140,155	\$139,484			
		quarterly percent	\$501,395	25% per Q	28%	28%			
HR	1	Average time to fill vacant positions	6.22 weeks	↓ avg. of 6 weeks	5.07 weeks	3.93 weeks			
		N = requisitions processed	103	N/A	12	2			

# Performance Measure Title

Measure Description:	
Target:	
Actual:	
Status:	   
Outcome Owner:	
Data Source:	
Link to Strategic Plan:	


## Key Insights

- Why are we getting the results we are getting?*
- Are we progressing toward our target?*
- Have we achieved our target?*
- Are there any unintended consequences of our actions?*

## Next Actions

- What is likely to happen in the future?*
- What are possible areas for improvement?*

# Small Drinking Water Systems

Measure Description: Percent of population served by smaller water systems that do not meet drinking water standards		Key Insights
Target:	20%	<ul style="list-style-type: none"><li>Small water system managers face numerous challenges due to lack of water system management experience</li><li>Through education and technical assistance water systems are better able to meet system standards</li><li>Line of Sight: division level PM not met, program level PM met</li></ul>
Actual:	22% (12,179/55,034)	
Status :		
Outcome Owner:	Brad Harp	
Data Source:	Wash. St. Dept. of Health and Envision Database	Next Actions
Link to Strategic Plan:	SD 1, 3 and 4: Pierce County has access to safe & reliable water resources	<ul style="list-style-type: none"><li>Ongoing education and technical assistance is critical due to the high level of turnover in small water system managers and operators</li><li>QI needed to evaluate effectiveness of current assistance strategies.</li></ul>

## **In summation, we have covered :**

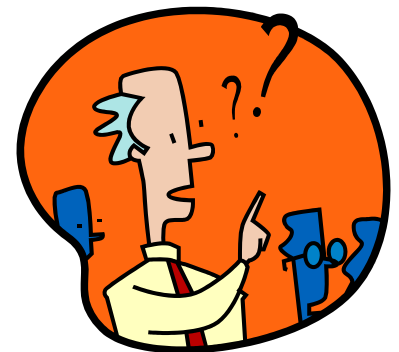
- Definition and principles and selection of performance measures,
- Dimensions of quality as it relates to performance measures,
- Types of work process measurements,
- Data collection and reporting of performance measures

We hope useful information has been provided to aide in your performance measurement work.

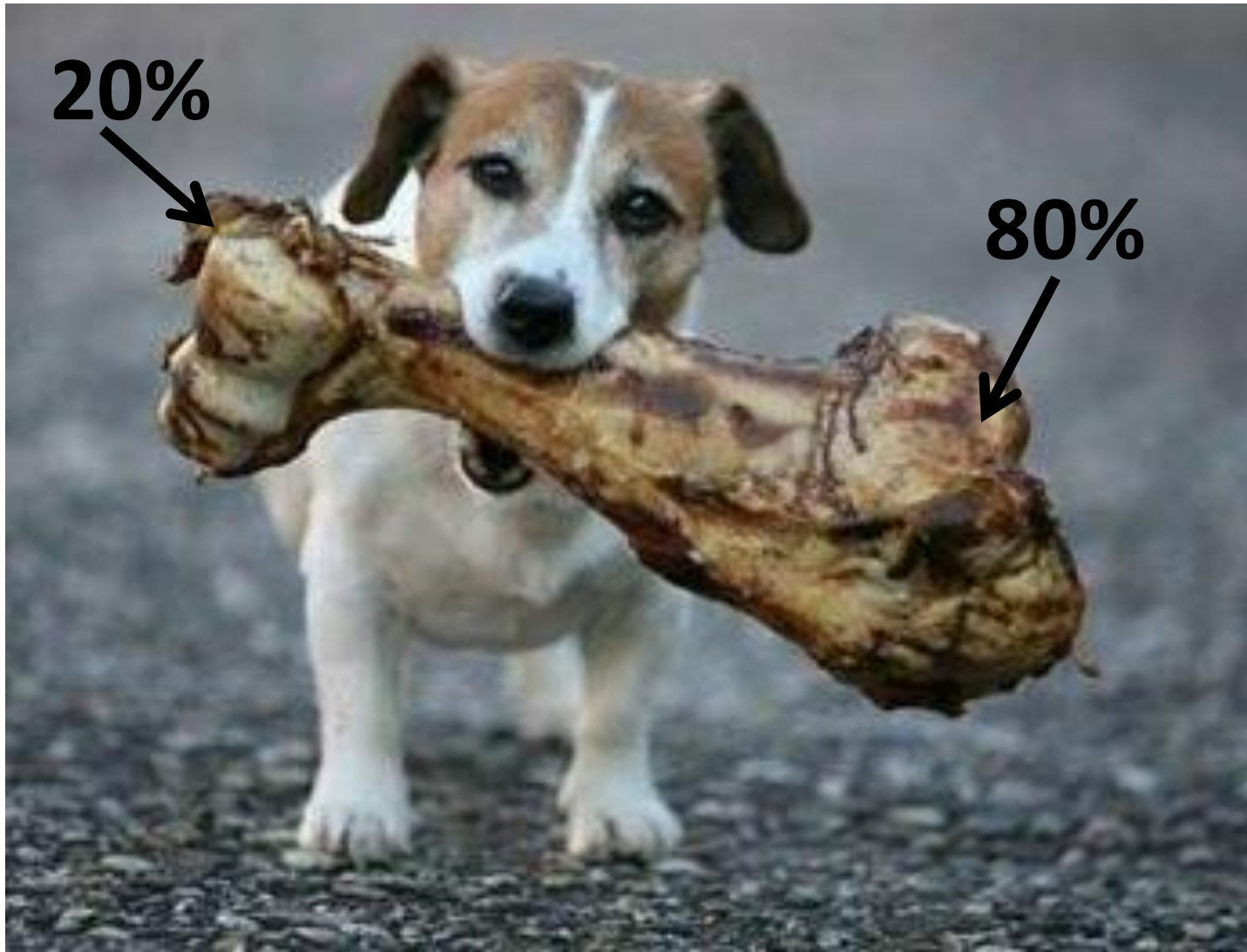
References to this topic have been provided at end of the 2<sup>nd</sup> half of our presentation

# ***What comments and questions do you have?***

[Please unmute your phone]



# Pareto Principle



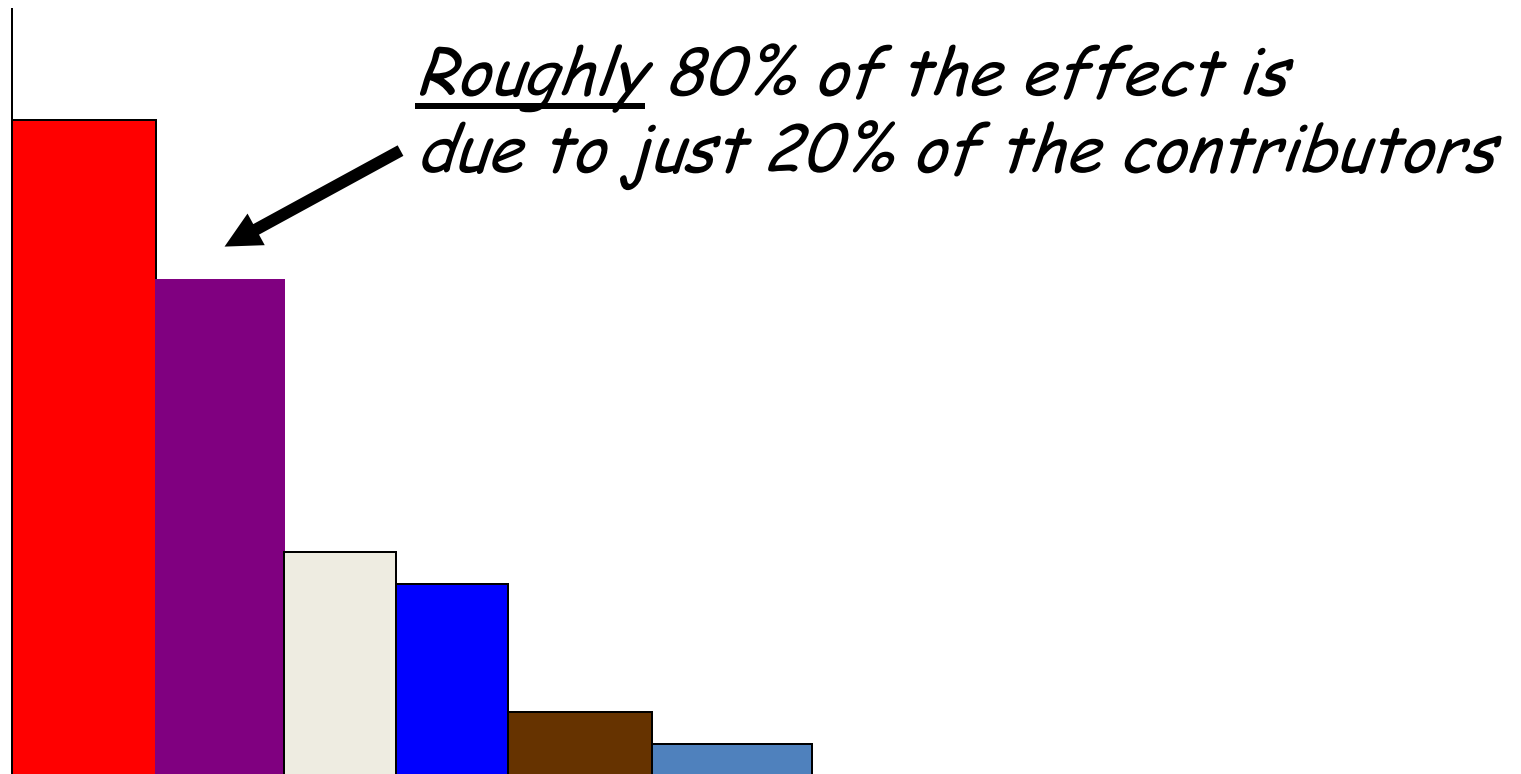
# Wilfredo Pareto



- Wilfredo Pareto
- An engineer, sociologist, economist, political scientist, and philosopher
- Pareto Principle (Pareto's Law or 80/20 Rule)
- Pareto Charts

# Public Health Performance Management Centers for Excellence

## Pareto Principle or the 80-20 Rule



# Identify the “Vital Few”

- Pareto Principle - In any group of things that contribute to a common effect, the majority of the effect (80%) comes from a relative few contributors (20% “vital few”)
  - These few contributors are called the “vital few” while the many other contributors are called the “useful many”
  - The “vital few” hold the greatest potential gain from quality improvement efforts
- Pareto Chart/Diagram—A fact based tool for priority setting in quality improvement efforts



# Pareto Charts & Diagrams

- When would I use this tool?
  - You are working with attribute data – **Data** represented in discrete units (dollars, hours, items, yes-no options) which measure the presence or absence of an **attribute** or characteristic for a response variable (defects, incidents, errors, etc.)
  - Anytime you want to focus attention on biggest contributors to a “defect” problem
    - Assess
    - Analyze (most likely)
    - Evaluate
- Simply listing contributors in descending order of magnitude can ...
  - Help groups focus where their efforts will have most effect
  - Help groups let go of lesser issues

## Building a Pareto Chart

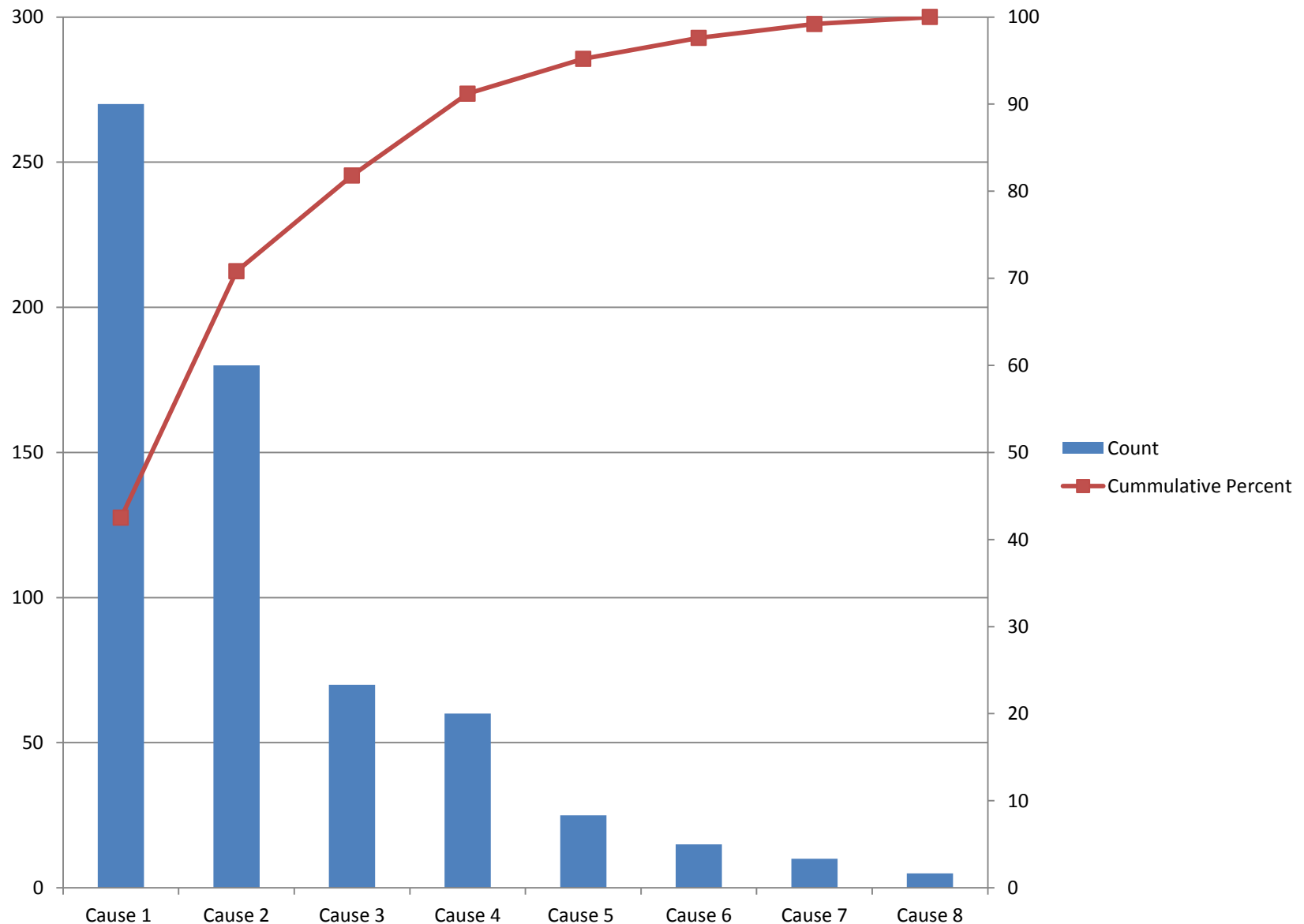
1. List data (contributors and counts) in descending order of magnitude
2. Calculate total
3. Calculate % contribution to total for each contributor
4. List the cumulative % with each additional contributor

Contributor/Cause	Count ( $n_x$ )	Percent of Total	Cumulative Percent
Cause 1 ( $n_1$ )	270	42.5	42.5
Cause 2 ( $n_2$ )	180	28.3	70.8
Cause 3 ( $n_3$ )	70	11.0	81.8
Cause 4 ( $n_4$ )	60	9.4	91.2
Cause 5 ( $n_5$ )	25	4.0	95.2
Cause 6 ( $n_6$ )	15	2.4	97.6
Cause 7 ( $n_7$ )	10	1.6	99.2
Cause 8 ( $n_8$ )	5	0.8	100
<b>Total</b>	<b>635 (N)</b>	<b>100</b>	

## Building a Pareto Chart (continued)

5. Create bar graph with two vertical axes – one for count and the other for cumulative %
6. The left vertical axis should be for the count and the maximum should equal your total count
7. The right vertical axis should be for cumulative % and the maximum should equal 100%
8. The horizontal axis should list each contributor, in order of descending order of magnitude
9. Graph the bars for the count of each contributor
10. Graph the cumulative % for each contributor as a line graph

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# Where is the opportunity to focus?

## How big an impact may I have?

Contributors	Count
Ann	11
Clare	6
Colleen	0
Connor	37
Donna	54
Foster	29
Grace	6
Henry	78
Julia	140
Patrick	18
Suzanne	178
Tom	43

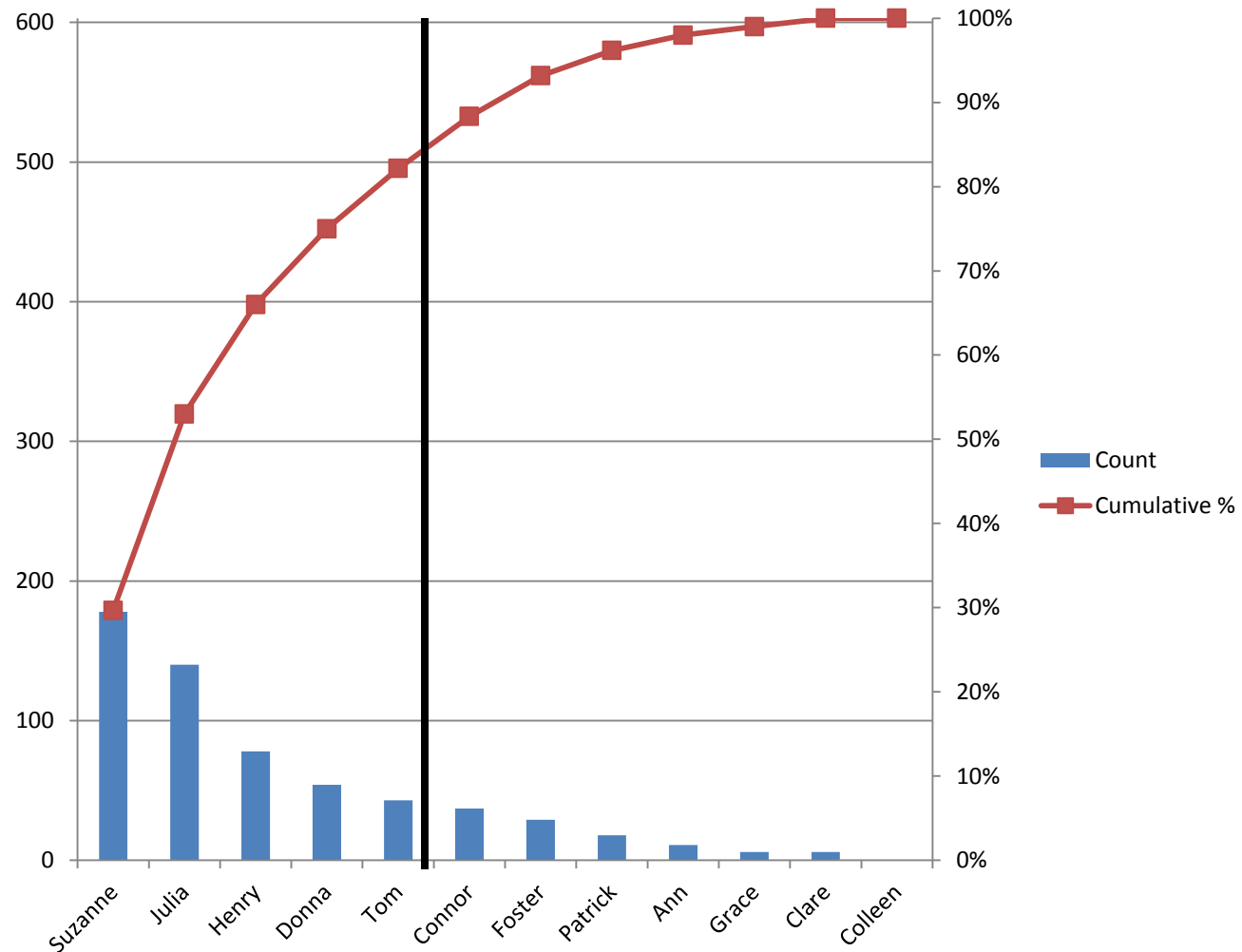
# Pareto Chart

## Example

Contributors	Count ( $n_x$ )	% of total	Cumulative %
Suzanne ( $n_1$ )	178	30%	30%
Julia ( $n_2$ )	140	23%	53%
Henry ( $n_3$ )	78	13%	66%
Donna ( $n_4$ )	54	9%	75%
Tom ( $n_5$ )	43	7%	82%
Connor ( $n_6$ )	37	6%	88%
Foster ( $n_7$ )	29	5%	93%
Patrick ( $n_8$ )	18	3%	96%
Ann ( $n_9$ )	11	2%	98%
Grace ( $n_{10}$ )	6	1%	99%
Clare ( $n_{11}$ )	6	1%	100%
Colleen ( $n_{12}$ )	0	0%	100%
<b>TOTAL</b>	<b>N=600</b>		

# Pareto Diagram

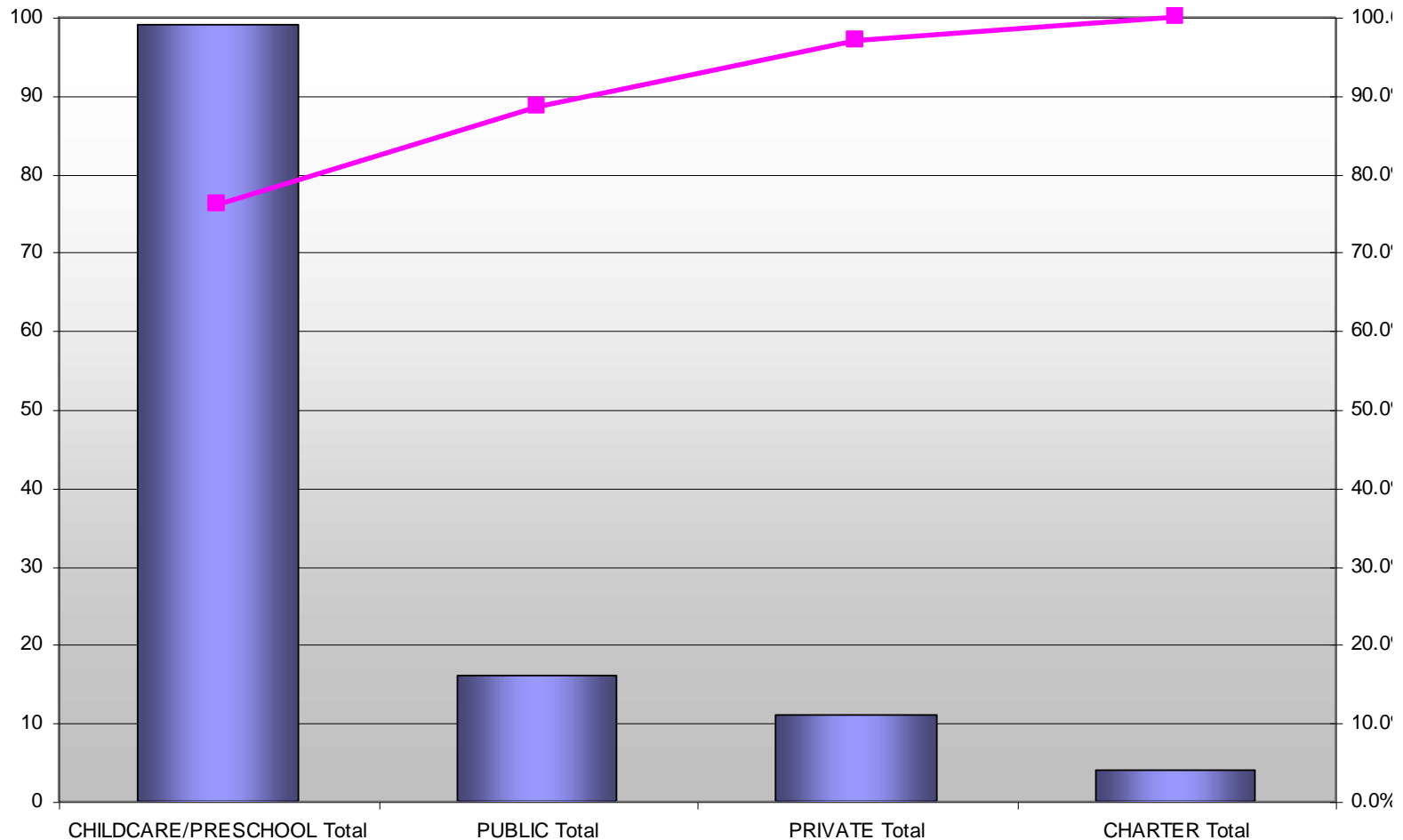
Example



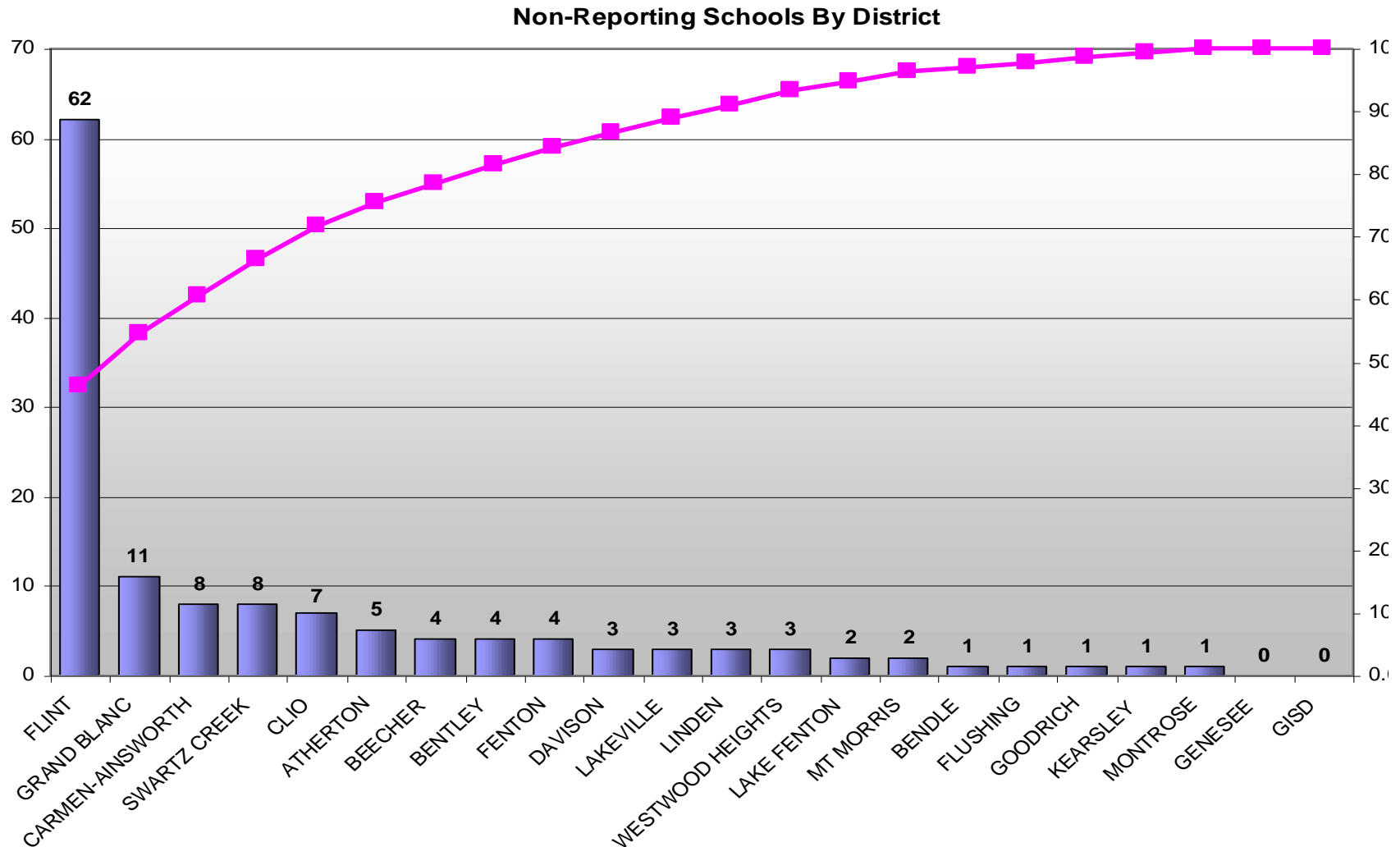


# Example of Pareto Chart

Non-Reporting Facilities by School Type



# Example of Pareto Chart



# Interpreting Pareto Diagram

- Start on the left!
- The “vital few” contributors will be the those that comprise 70-85+% of total
- You may not have found “cause” at this point
- You may only have identified an area of your problem where further analysis is warranted
- The “useful” many may be addressed later in the project, or in later improvement cycles

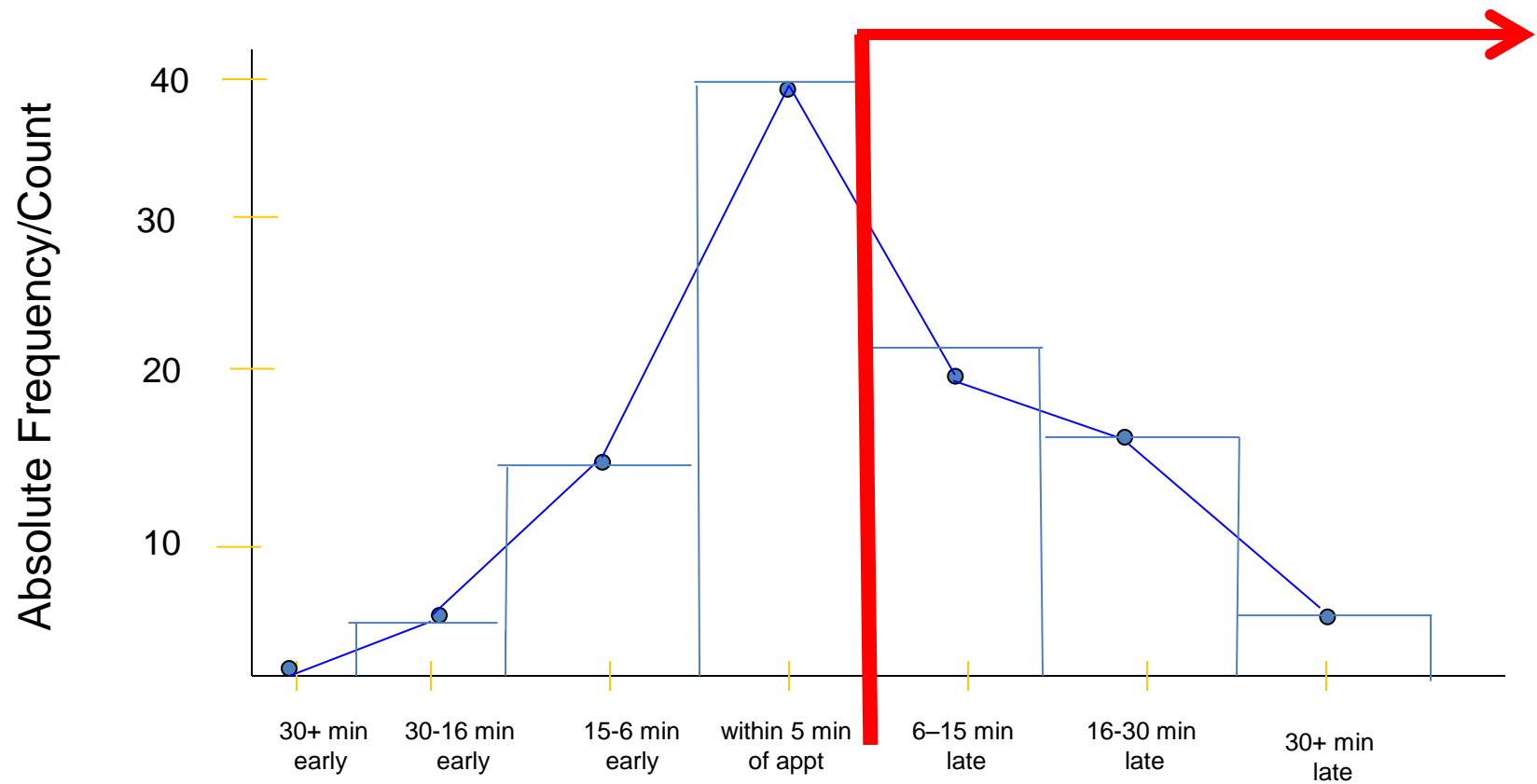
## ***Example of Data Analysis: Why Are Clients Late For Appointments?***

- It is a question that all of us have wrestled with for a long time.
- Every time we think we have heard all the excuses someone invents another creative one.
- A Health Department decided to track arrival times for scheduled appointments for HIV client services

# Client Arrival Times Results

	# Clients at arrival time
7:40 AM	3
7:45	7
7:50	9
7:55	11
8:00 appt	16
8:05	13
8:10	12
8:15	10
8:20	8
8:25	5
8:30	5
8:35	4

# Histogram - Grouped Data

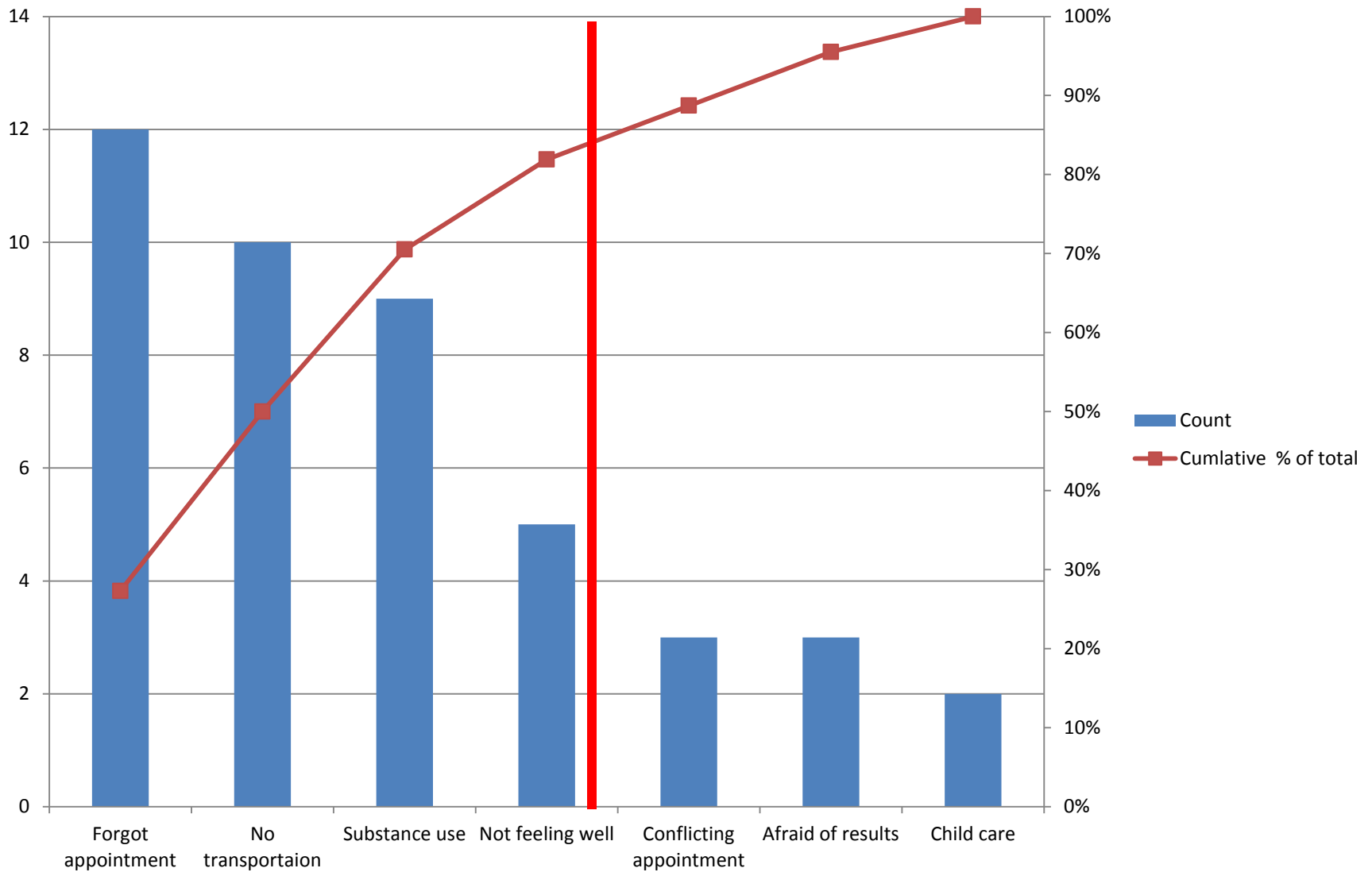


# Data Collection Step

## Data Collection on reason for clients not arriving on time (late)

Reason (Contributor)	# of clients ( $n_x$ )	% of total	Cumulative %
Forgot appointment ( $n_1$ )	12	27.3 %	27.3 %
No transportation ( $n_2$ )	10	22.7 %	50.0 %
Substance use ( $n_3$ )	9	20.5 %	70.5 %
Not feeling well ( $n_4$ )	5	11.4 %	81.9 %
Conflicting appointment ( $n_5$ )	3	6.8 %	88.7 %
Afraid of results ( $n_6$ )	3	6.8 %	95.5 %
No day care/child care ( $n_7$ )	2	4.5 %	100 %
<b>Total (N)</b>	<b>44</b>	<b>100 %</b>	

# Pareto Diagram





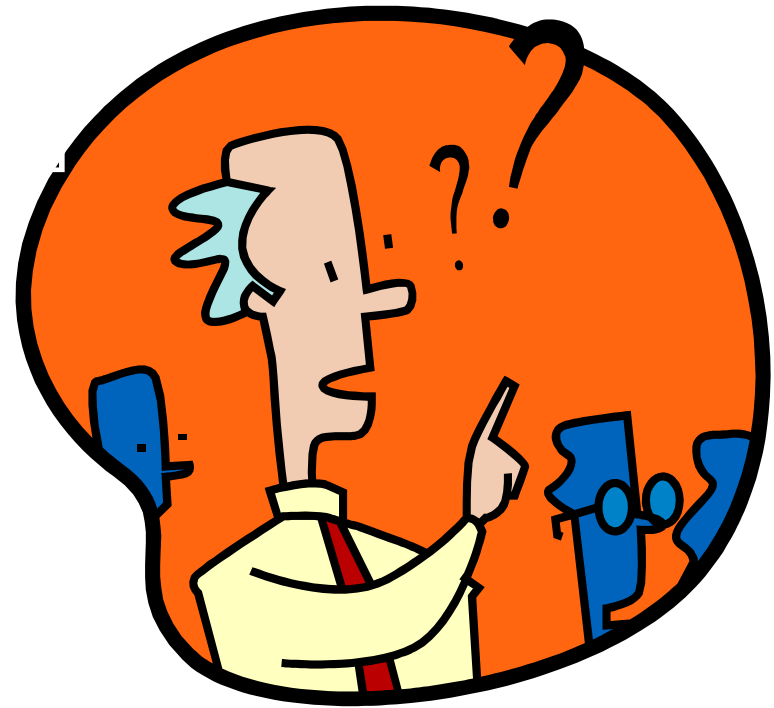
# Investigating The Reasons and Taking Action

- Why Are Clients Late For Appt?
- Data analyzed using Pareto chart
- Then address the top 3-4 reasons (the vital few) to test and implement interventions that will address a likely “root cause”, thereby creating greater improvement that can be sustained.
- Use a Cause and Effect diagram (fishbone) to understand the causes.

# Let's Review Pareto Principle/Chart

- 80% of outcomes are from 20% of causes
- Concentrating improvements efforts on these few (20%) will have a greater impact
- Note: The Pareto Principal is a guide, not a scientific certainty
- Pareto Charts are used to display Pareto Principle in action
- A fact based tool for priority setting in quality improvement efforts

***What comments and questions do you have?***



# Resources and References

- Public Health Performance Management Centers for Excellence Web site: [www.doh.wa.gov/PHIP/perfmgtcenters](http://www.doh.wa.gov/PHIP/perfmgtcenters)
- *Public Health Quality Improvement Encyclopedia*, Moran and Duffy, Public Health Foundation, 2012
- *The Lean Enterprise Memory Jogger for Service*, Goal QPC, 2009
- *The Public Health Memory Jogger II*, Goal QPC, 2007
- *The Improvement Guide*, Langley, Nolan, Norman & Provost, 1996
- Embracing Quality in Local Public Health: Michigan's Quality Improvement Guidebook, 2011, [www.accreditation.localhealth.net](http://www.accreditation.localhealth.net)
- [Quality Improvement Resources](#) from the Public Health Foundation